Lawns and gardens of the Knob Lake Area.

by

J.R. LOTZ

With compliments,
Jim Lotz
8/5/61

Ore Testing & Research Lab.,
Iron Ore Company of Canada,
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To All Concerned:

This paper by Mr. J.R. Lotz entitled "Lawns and Gardens In The Knob Lake Area" was compiled as a result of his studies at the McGill Subarctic Research Laboratory during the summer of 1956.

The distribution of this paper is intended to help stimulate the interest of hopeful gardens and to offer practical suggestions for the choice of tested plants and seeds.

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H.E. Neal

LAWNS AND GARDENS IN THE KNOB LAKE AREA

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KNOB LAKE, P.Q.
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INTRODUCTION.

This booklet was compiled during the summer of 1956 while the writer was working as a Research Assistant at the McGill Suberctic Research Laboratory, Knob Lake, P.Q. It is an attempt to take geography out of the textbooks, and put it to work. Its aim is to provide a handy, non-technical guide to the preparation of land, and the sowing of various plants.

There are practical as well as aesthetic reasons for growing grass and vegetables in such places as Knob Lake. Lawns, trees, shrubs and flowers not only provide a pleasant sight in this empty, barren land. They also help to keep down dust, temper the wind, and gardens provide fresh food in the summer. Some hints are given on the selection of sites for vegetable growing in geological exploration camps, and on the Mid-Canada Radar Line stations.

The information contained in this booklet was culled from a wide variety of sources - government reports, studies of similar areas in Finland, and at Fort Chimo, Professor Hustichs work, and the results of an experimental plot at the McGill Laboratory. The writer is deeply indebted to Mr. Nowosad, of the Federal Department of Agriculture Experimental Farm service, who supplied seeds for the test plot, to Dr. Leahey of the same service who supplied a soil test kit, and to Mr. Lajoie of Macdonald College who gave much advice on soil surveying. Mr. and Mrs. John Stubbins of Knob Lake provided much valuable information on their garden, and special thanks are also due to Mr. "Buzz" Neal, I.O.C. geologist.

The writer also wishes to thank all his colleagues at the McGill Laboratory, especially Morton Fraser, for their constant help, advice and encouragement.

CLIMATE

It has been said that there are only two seasons in Labrador-Ungava - winter and August. This is a slight exageration, but a study of the climatic figures since August 1948 (when continuous records began) shows up the startling severity of the climate of Knob Lake. Every month of the year is liable to frost, and snow has occured sometime during every month on record except July.

Cultivation cannot begin until the frost is out of the ground. This occurs when the mean daily temperature (highest temperature for the day, added to the lowest temperature, and divided by two) rises above 32'F, and stays above that figure. This occurs in Mid May in Knob Lake. The earliest thaw on record was May 2nd, the latest May 26th, and the average date is May 13th. This means that even the seeds cannot be planted until mid May at the earliest. Before this it is difficult to dig the land over - even with a pickaxe as was done by the writer in 1956. The best time for seeding is the first week in June, by this time the land will be fairly easy to ork, and the growing season (when the mean daily temperature rises to 43'F) is just beginning.

Frost is liable to strike at any time, and under the section dealing with the preparation of the land, some hints are given that will help to protect vegetables from this hazard.

Frost is the greatest handicap to the raising of vegetables in this area. There is a relatively frost free season that begins in mid June. Last frosts in Spring have occured as late as June 25th (1956) but the average date of their last occurence is June 16th. Frosts begin in Autumn as early as August 18th, but usually they are not common until August 30th. In the seven years on record, there has been an average frost free period of 75 days; the longest was 89 days in 1954. Since frost is considered here as a temperature of 32'F in a screen 4' above the ground (the standard Stevenson screen), ground frosts are not included in these figures.

Precipitation is usually adequate, though June sometimes tends to be droughty, and it is as well to water any ground that is planted. When snow begins to lie on the ground, it should be left, and not cleared, as it acts as a warm blanket for seeds.

The wind is a troublesome feature of the Knob Lake climate, and many shrubs and flowers need shelter from it. Ground hugging species like pansies do better than others like petunia which need sheltered locations.

SOIL

As if the climate were not enough to contend with there is marked absence of good soil in the area. In a survey of 15 square miles around the townsite, the writer found no soil really suited to cultivation. Acid, thin, stony, and often wet, the clay soils of the district must be considerably improved before they are suitable for plant growth.

The clay soils are cold soils, but this can be countered by mixing them with sand. The sand, and sandy soils in general, tend to heat up quickly, and to lose heat quickly. Peat should be mixed in with the sand and clay, and a top dressing of peat is vital. This top layer serves to insulate the ground, and also, since the peat is not as acid as the clay soils, it helps to reduce the acidity of the soil mixture, and to provide badly needed organic material.

There is some fairly good soil near Squaw Lake, in channels in the vicinity. Under the grey yellow caribou moss on burnt-over areas there is usually about a foot of clay or clay loam soil. In digging it up, there is often a layer of gray soil underneath the black (humus) layer. This is the leached layer - and it is useless for gardening, since all the minerals have been washed out of it. The soil that is red-brown, or brown, and stiff to fairly stiff when rolled in the fingers is what is needed. Sand can usually be found in isolated areas - there are patches east of Ruth Ridge, and on the western side of Slimy Lake. Peat from the tamarack bogs is less acid than the clay and sandy soils, but even with this mixed in, the soil is still very acid, and will need liming.

The way to make a garden soil is as follows: Mix together clay, sand, and peat in about equal proportions, and put on a top dressing of peat about 2" thick. Lime this with either crushed dolomite (not the most efficient way to get lime, but better than nothing), or agricultural lime - about two to three pounds for every 100 square feet should be enough. No exact figure can be given, as the acidity of each of the different soil constituents varies so much, but, since in this wet climate, the lime tends to get washed down into the soil, it is better to overlime rather than to underlime.

When the soil is mixed it should be limed, and again after the plants are put in. Experiments at Fort Chimo have shown that the soil there is deficient in nitrogen. For nitrogen fixing legumes such as beans, peas, alsike clover, and alfalfa, this is not problem, but for other vegetables and grasses a fertilizer mixture containing Phosphorus, Nitrogen and Pottasium (4-24-12 was used at Fort Chimo) would be advisable, and a few pounds of this to the 100 square feet will considerably help growth.

PREPARATION OF THE LAND

Selection of a site is quite important, since planting in sheltered spots, and on patches of good soil can often make the difference between success and failure. Give the plants plenty of sun, and lots of shelter. South facing slopes are the best places. Sandy soils near lakes are also good places, since they warm up quickly, stay warm, and tend to be frost free (lakes create localised pockets of warmer air over and around their surfaces), and a quick crop of radish and lettuce can usually be relied on. Valley bottoms and hollows should be avoided - frost tends to collect in them on cold, clear nights. A valley side with poor soil is a better bet for vegetables than a valley bottom with good soil, unless precautions are taken to avoid frost draining into them. Avoid patches of soil in bare rock areas - the rock loses heat quickly at night, and such areas are also liable to frost.

The prevailing wind in the area is from the north-west, and so planting in the lee of houses is recommended. Fences around gardens will help protect seedlings from the cold blast, and this will also prevent the town dogs digging up the plants.

The land should be dug over, and hoed before planting - a good crumb structure gives the plants a better start. It is advisable to plant seeds at about 6" below the surface otherwise the frost and thaw action tends to heave the seeds to the surface.

Putting some vegetables out in cold frames gives them a good start, and also has the advantage of adding a few days to their growing season, since the growing season begins on June 4th (7 year average), which is actually some days before the end of the period when killing frosts are likely in Spring. A cold frame can be simply constructed by placing a sheet of glass over a shallow box filled with soil, making sure that there are no gaps between the top of the box side and the glass sheet.

Most of the grasses, vegetables, flowers, shrubs and trees recommended have not been tried out in Knob Lake. Small variations in climate, soil, or exposure may mean the difference between life and death for some plants so that although many varieties are named, not all will be successful. One of the major drawbacks to the Knob Lake area is the low sunshine record, and the low summer temperatures which will prevent many plants from maturing. Most of the plants named have been tested either at Knob Lake, Fort Cairo, or at one of the Department of Agricultures Experimental Substations at Fort Simpson (Northwest Territories) and Whitehorse (Yukon) Botanical names are bracketed after common names.

All grasses in the area, native and sown, tend to come up in typical bunchy Arctic fashion rather than as a trim neat sward. Whenever any attempt is made to prepare land, a native grass, northern bent (Agrostis borealis) tends to sneak in. It may dominate a lawn, and grows rather rank. In fall, lawns should be dug over to prepare a good bed for the following year.

Of the grasses tested on the experimental plot in summer 1955, the brome succeeded best, it shot up quickly, but died quickly once the frost came. Though rather a coarse grass, it is useful for a lawn mixture. Grimm alfalfa grows well on peaty soils, and Climax timothy is a good growing grass which may be killed by a disease (sclerotina borealis) which affects it at low temperatures. Smooth stalked meadow grass does well on clays, but must be reseeded annually, and this and red clover have both done well in Northern Finland. At Fort Chimo, on a sandy soil that was not limed, the following grasses were planted with varying success - White Sweet Clover, Altaswede Red Clover, White Dutch Clover (also tried at Knob Lake - with poor results), Empire Birdsfoot Trefoil (poor at Knob Lake), Medicago Falcata, Intermediate Wheat Grass, Meadow Foxtail, Tall Fescue, Russian Wild Rye, Reed Canary Grass, Canada Bluegrass, Red Top, Red Fescue, Crested Wheat Grass, and Slender Wheat Grass. A mixture of brome, alfalfa and timothy was quite successful at Knob Lake, though killed by frost. Varieties that were fairly successful at Whitehorse, where the climate is more severe than at Knob Lake, include among the grasses, brome, tall and red fescue, Canada wild rye and Kentucky Blue grass (this last grass made no showing at Knob Lake, but may need time to adapt itself, reed canary

and alfalfa among the legumes. Fort Simpson tests show that most grasses and legumes are killed out in fall if snow cover does not protect them. Brome grass, crested wheat grass, western rye grass, and Russian wild rye survived these conditions, and Grimm alfalfa and Medicago Falcata (Ottawa No 1291) also. For putting down a lawn, many of the above grasses are unsuitable, as their main use is as fodder.

VEGETABLES

Broad Beans - Broad Windsor is recommended, but since it takes about 70 days from sowing, it may not yield in some years.

Beans, waxed and green podded - most varieties are injured by unseasonal frost - the Kinghorn variety was killed early by frost on August 17th at Knob Lake. This variety does well if there are no unseasonal frosts, and others recommended are Contender, Pacer (tried at Fort Chimo), Strider, Stringless Green Pod, and Round Pod Kidney Wax.

Beets - should be sown at the end of May, and stored in moist sand, moss or sawdust in a cellar. Recommended varieties include Detroit Dark Red selections (not No 16), XXX Globe, Flat Early Egyptian.

Broccoli - rich in vitamin A and C this is a good garden crop that takes 75 days from seeding to maturity. It is advisable to start this vegetable under glass. Varieties - De Cicco, Freezems, Propagemo, Waltham 29.

Brussel Sprouts - started under glass this vegetable has done well in the Northwest Territories and the Yukon. Dwarf Perfection is the variety recommended.

Cabbage - this vegetable is usually very successful in the North. Started under glass, it will still do well if sown directly into garden rows. Golden Acre and Viking Small Early (early varieties), Copenhagen Market and Glory of Enkhuzen (main crop) Penn State Ballhead (storage) are varieties that will probably do best.

Carrots - may be successful, but probably the rainfall is too heavy in this area, and they yeild best on light soils. Chantenay No.27 sown at Knob Lake struggled to the surface, but showed no other development.

Cauliflower - though not an easy crop to grow, these will yeild if transplanted. Snowball varieties did well in the Northwest.

Celery - this vegetable requires a lot of care and preparation, and can be grown as transplants on southern exposures. Salt Lake is the best bet.

Lettuce - does well in the north, and has been grown at Tuktoyaktuk on the Arctic Ocean. Small heads appeared at Knob Lake, Varieties include Grand Rapids (Leaf), Great Lakes 659 (Leaf - these grew quite well at Fort Chimo), Imperial 456 (for muskeg soils) and New York 515.

Onions - these do not form large bulbs, and should be planted as soon as the land is workable. Early Yellow Globe was tried at Knob Lake without success, but this variety with Red Wethersfield and Yellow Globe Danvers should do well on a better soil in good years.

Peas - early varieties can be grown, and the Littlemarvel variety grown at Knob Lake this year did very well, though frost-killed in mid-August. This is probably the best vegetable for a sure crop at Knob Lake.

Other varieties are Selkirk (tried at Fort Chimo with good results), Alton, Wasatch, Engress, Homesteader, Lincoln, Thos. Laxton, Stratagem, American Wonder.

Potatoes - these are very susceptible to frosts, even light ones, and do not do well in heavy clay soils. Plymouth does well at Fort Chimo, and Warba, Pontiac, Vicks Early, Green Mt., Antigo, Red, Boone, Dazoe, Red Kote, Canoga, Van Isle, White Cloud, 717-11-9, Nemmac, Cherokee and White Milan are others that could be tried.

Radish - several seedings of these are occasionally possible, as they are ready 25-30 days after seeding, but they did not come to maturity on the test plot. Cavalier, Cherry Belle, Comet, Saxa, French Breakfast, White Icicle (the last two tried and successful at Fort Chimo in 1956) do well in the north.

Rhubarb - this has been grown in the townsite, but it needs fertiliser to do well. Macdonald, Canada Red, and Ruby varieties are recommended.

Turnips - summer turnips - should do well if seeded in mid May. Early White Milan, and Early Purple Top Milan, and Petrowski have been successful at Whitehorse.

Swedes - Laurentian did not do well on the test plot at Knob Lake, or at Chimo.

TREES AND SHRUBS

The commonest trees around Knob Lake are the spruce, white and black, and the tamarack (larch). Considerable care is needed if they are to be transplanted successfully.

Spring is the best time to get transplants, as then the trees will have a longer time to become established in their new site before winter sets in. However, it is essential to get the root systems of the spruce out undamaged, otherwise the trees will shed their needles, turn brown, and die. For tamarack, which is found in many of the bogs and is a deciduous tree, plenty of water, a peaty soil, and a dressing of dolomite will give the best results. Balsam fir will grow well, and can probably be grown from shoots. There are patches of these trees on the Northeast shore of Knob Lake, at the southeast end of Dolly Lake, and near the south end of Gillard Lake.

Native Mountain Ash (sorbus decora), Siberia Dwarf Pine (pinus pumila), Common Mountain Pine (pinus montana) are recommended by Professor Hustich as worthy of a trial in the area.

Trees and shrubs that have been successfully established at Fort Simpson and Whitehorse, and in Finland, include Manitoba Maple (Acer Negundo), Norway Spruce (Picea Abies), Siberian Elm (Ulmis Pumila), Siberian Pea Tree (Caragana Arborescens), Hawthorn varieties (crataegus douglasxii, and c. coccinea), Lilac varieties (syringa villosa, s. josikea hybrida, s. vulgaris), Amelanchirer varieties (a. bartramania - native to the area, a. botryapium, a. laevis) Cotoneaster varieties (Peking cotoneaster - c. acutifolia, Hedge cotoneaster - c. lucida), Tartarian Honeysuckle (Lonicera tatarica), Altaic Rose (Rosa spinossissima altaica), and hybrid rose varieties (Betty Bland and Hansa).

Yellow Chokecherries (prunus virginiana), Golden Clematis (clematis tangutica), European Bird Cherry (prunus padus commutata), Pear (pyrus ussuriensis) and spirea varieties (s. chamaedryfolia, s. media) are other possibilities.

Very few of these trees and shrubs are native, and all may not bloom. Also there may be difficulty in obtaining cuttings. The lists have been compiled in an attempt to name as many species as possible, so that some at least may be tried.

HERBACEOUS PERENNIAL FLOWERS

Winter protection with straw, hay, spruce boughs, moss or drifted snow is usually essential for these.

The best flower to cultivate is the peony, which unfortunately may require a year or two to get really adapted. They should be planted in September, on a well drained, sunny location, and covered with 2" of soil. Varieties include - White - Festive Maxima (early, Marie Lemoine (midseason) Pink - Monsieur Jules Elie (early), Reine Hortense (midseason), Sarah Bernhardt (late); Red Inspector Levergne (early), Karl Rosenfeld (midseason), Felix Crousse (late).

Recommended for trial based on showings at Fort Simpson and Whitehorse are Common Bleeding Heart (Dicenta Spectabilis), Delphinium (Wrexham strain, Larkspur Pacific hybrid), Babys breath (gypsophila paniculata), Lupin (lupinus sp.) Maltese Cross (lychnis chalcedonica), Oriental poppy (papaver orientale), Golden Glow (rudbeckia laciniata hortensis), Sneezewort Yarrow (Achillea ptarmica var. The Pearl), Columbine (Aquilegia sp.) Ox Eye Daisy (chrysanthemum leucanthemum), Sweet William (Dianthus barbatus). Most of the above are medium high or high species. Better results will probably be obtained with low species such as Cottage Pink (dianthus plumarius), Blanket Flower (gaillardia aristata var Goblin) and Broom (Genista sagittalis).

ANNUAL FLOWERS

This list is given, with a few comments. Those marked Thus ' do better if started indoors and transplanted later.

Sweet Alyssum, (lobularia maritima) - good for border.

'Common Snapdragon (antirrhinum majus) - very good, for bedding.

Swan River Daisy)brachycome) - for bedding.

Rocket Candytuft (iberis amara) - quite hardy.

'Pot Marigold (calendula officinalis) - for bedding.

Bachelors Button (centaurea) - excellent, for bedding.

Rose Clarkia (clarkia elegans)

Morning Glory (ipomean tuxtlensis)

Cape Marigold (dimorphotheca aurantiaca) does well in northwest, and is very hardy. Useful for bedding.

Common Cysophila (gysophila elegans) - for bedding.

Orchid Godetia (godetia viminea).

Scarlet Flowering Flax (linum grandiflorum)

Dwarf Snowball (lobelia erinus) - very good for borders.

Mignonette - for bedding.

'Common Nasturtium (tropaeolium) - good, likes sunny spots.

Nemesis (nemesis strumosa).

Love - in - a-Mist (nigella damascena) very good for cutting.

Garden Pansy (viola tricolor hortensis) - excellent.

California Poppy (eschscholtzia california) - excellent for bedding.

Wingleaf Butterflyflower (schizanthus pinnatus)

Sweet Peas (lathyrus odoratus) very good, if started indoors, transplanted to south-side wall site.

African Marigold (tagetes erecta) - good bedding.

Others that might be tried are Toadflax (linaria sp.), Edging Lobelia (lobelia erinus), Sweet Alyssum (lobularia procumbens), Miniature Petunia (petunia hybrida), Rose-Moss (portulaca grandiflora), Mexican Marigold (tagetes tenuifolia pumila), Pansy (viola tricolor), China Aster (callistephus chinensis), Clarkia (clarkia pulchella), Calliopsis (coreopsis), Godetia (godetia grandiflora), Rocket Candytuft (iberis amara), Scarlet Flax (linum grandiflorum), Ten Week Stock (mathiola incana var annua), Corn Poppy (papaver rhoeas), Drummond Phlox (phlox drummondii), Burning Bush (kochia scoparia-trychopylla), Youth and Old Age (zinnia elegans), Everlasting (acrolinum roseum), and Strawflower (helichrysum bracteatum).

FLOWERING BULBS

Gladiolus - when sprouted in sawdust or moss about ten days to two weeks before planting out, early varieties of gladioli can be grown. Planting should be done about late May. Varieties successful at Fort Simpson were Fay, Gold Dust, Huntress, Interceptor, J.S. Bach, Purple Gown, Similon, and Snow Princess.

CONCLUSION

To put it mildly Knob Lake is not the best place in Canada to try to begin a garden. It means a lot of hard work for little return, and the ever present possibility that some vegetables and flowers will not come to maturity, or will be blasted by a midsummer frost. Gardening is a pioneer task, but if the settlement is to stay and grow, something more than four walls and central heating are needed to create a home in this wilderness. Once a few gardens and lawns are begun, and some shrubs, trees, and flowers become established, the town will look a little less dreary, and a little less dusty.

The writer will always be pleased to hear from anyone in the townsite or in the area who needs advice on planting vegetables, flowers, shrubs, grasses, or trees. I am not at present able to supply addresses where the various recommended plants can be obtained. Any good seed merchant should be able to handle such enquiries.

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and all enquiries regarding this booklet should be directed there.

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Lotz, J.R., 1956. Lawns and gardens in the Knob Lake area. McGill Subarctic Research Laboratory, September, 1956 (mimeograph)

This reports a project to survey gardening potential in the area by reviewing the climate, surveying soils, testing varieties of grasses, ornamentals and garden vegetables, and considering approaches to cultivation under local conditions.

Climate — Frost can occur any month
- Snow does occurred any month except July
- Daily mean temp stays above 0°C after May 13 (± 12 days to extremes).
- Avg last frost June 16
  first frost Aug 30
- 7 yrs record, avg frost free period 75 days.
- Precip usually 'adequate', except June May be drought
- Windy

Soil - acid, clay, stony, wet, thin, cold.
- he suggests ways of making up soil to do the job.

VARIETY TESTS

Grasses — brome best, died in fall